In the Specification

Please replace the paragraph beginning at line 18 on page 12 with the following amended paragraph.

In Fig. 6, the Tantalum 552 and the cap 534 are removed using, for example, reactive ion etching. Then, a coupling layer 660 is formed over the bias layer 630. A cap 670 is formed over the coupling layer 660. To provide improved pinning, the first 630 bias layer and the coupling layer 660 are formed using layers of NiFe, CoFe, or other high resistivity allows such as NiFeCr, ~~$NiFe_x$, $CoFe_x$~~ NiFeX, CoFeX. While the longitudinal bias field provided by the first 630 and second 660 bias layers maximize the linearity of the sensor 600 by maintaining the magnetization in the free-layer 618 and the pinned-layer 612 orthogonally to each other, the resultant magnetization of the free-layer 618 can rotate freely under the influence of a readback field. The coupling layer 660 is exchange pinned by the antiferromagnetic layer (PtMn, 646) in areas outside the track. The intra film exchange coupling in the layer 660 provides pinning to the bias layer 630 in the track area.